

Design and Rehabilitation



Prof Paul Chamberlain
Prof Ian Gwilt
Dr Joe Langley
Claire Craig
Roger Bateman

Design Students (MDes Product Design)



The Princess Royal Spinal & Neurorehabilitation Centre

Dr Mathews
Dr James White



supported by the Sylvia Adams Charitable Trust

Background

The workshops were conceived and delivered by research staff who work within Lab4Living (www.Lab4living.org.uk). Lab4living is an interdisciplinary research team based within the Art & Design Research Centre with expertise across design and healthcare.

Our aim is to develop products, environments and propose creative strategies for future living in which people of all ages and abilities 'not merely survive' but are enabled and empowered to live with dignity, independence and fulfillment. Our approach adopts a holistic, human-centred approach rather than focusing solely on medical or social care provision. We consider quality of life; facilitating the functional whilst also addressing issues of identity, individuality and spirituality and enhancing aspirational qualities such as pleasure and leisure.



*He with body waged a fight
But body won, it walks upright.
Then he struggled with the heart;
Innocence and peace depart.
Then he struggled with the mind;
His proud heart he left behind.
Now his wars on God begin;
At stroke of midnight God shall win*

The Four Ages of Man, W.B. Yeats

Yeats' poem captures the essence of our approach that addresses the physical, the emotional and psychological, the intellectual and the spiritual challenges facing individuals across the lifespan. While Yeats' poem suggests sequential challenges throughout life we accept these factors both challenge and enrich our life and can face us at any time.

Staff within Lab4Living have engaged with a range of users spanning a diverse range of abilities, contexts and environments. Work includes products for the severely sensory and physically impaired (deaf/blind) within

educational, recreational and therapeutic environments, a safe medical drug delivery system for intensive care, toileting and washing challenges for the frail elderly. Lab4Living adopts a co/participatory – design research approach and has developed and implemented a range of innovative methodologies to engage users to enhance our understanding of the world and respond accordingly with creative solutions. The research team have explored and extended the ‘role of design’ to empower individuals enabling them to be more resourceful (Future bathroom). Supported by the British Council these methods have been extended through cultural explorations in Taiwan and Turkey.

Despite the extensive experience of the research team who have collectively faced many challenging communities and contexts for design research the ‘*Design & Rehabilitation*’ project presented new and uncertain territory.

Aims and Objectives

Because of the potentially small numbers and transient nature of the participants and the relatively short time frame of the study it would be difficult to establish meaningful data that would draw any quantitative conclusions. Therefore the aims and objectives were considered in reflection of the circumstances and focused more on a qualitative evaluation strategy to;

- Increase participants understanding of design/ways of thinking about design
- Enable participants to recognise and identify potential applications of design to their own personal circumstances
- To increase participants confidence in approaching everyday challenges that living with a spinal cord injury brings

Evaluation strategy

- Participants understanding of design
- Participants understanding of the potential applications of design to their lives
- Confidence levels
- Experience of attending the workshops (opportunities and challenges)

The research team wanted to establish shared ownership of the project with the SI participants and make explicit this was a joint enquiry and opportunity for shared learning. The research team wanted to break the stereotypical view of the designers’ role as the ‘expert’ drafted in to solve functional problems identified by the users.

Ethics

From the outset it was decided by the Spinal Injuries Unit that the work should be framed as a service development and that any data collected would effectively be an evaluation of the service development. There were a number of good reasons for this. The clinical team wanted all their patients to

have the opportunity to participate in the sessions, they were interested as to whether this could form another type of therapeutic intervention and they were keen to work with us to look at the effectiveness of this.

From the perspective of the design team it was felt that this was very much an exploratory piece of work, looking at the feasibility of delivery, with many unknowns. Whilst we were clear of the overarching questions we hoped that the project would answer there were no real precedents in relation to evaluate and capture individuals experiences, to the consistency of our population (at an acute stage of the condition) or to how we could measure change in a way that was meaningful to our participants, to the medical and design community. We hypothesised that to effectively measure and understand any real and long lasting change that a longitudinal study utilising a rigorous methodology would be required. This was not feasible within the time and resources we had and it was therefore felt that this work would help inform our understanding and inform a larger study in the future. The framework of the service evaluation was therefore fitting to our aims as the design team and to the Unit.

Given that this was a service evaluation it was therefore not necessary to apply for ethical approval to the National Research Ethics Service. However to ensure thoroughness we did submit to the Faculty Research Ethics Committee in order to ensure that our work was conducted in an appropriate manner. From the perspective of the Faculty Research Ethics Committee our planned work raised just one main point of concern which related to the use of film and photography of participants. Issues related to whether individuals who had experienced such a dramatic change in relation to body image would be happy being filmed but also how watching this film back might impact on their psychological well-being. Procedures were therefore put into place for informed consent and we took steps to ensure that any information and advertising about the project was explicit in relation to the fact that film and video would be used.

(‘Defining research’, NRES Guidance, NHS National patients Safety Agency, National Ethics Service)

Workshop design

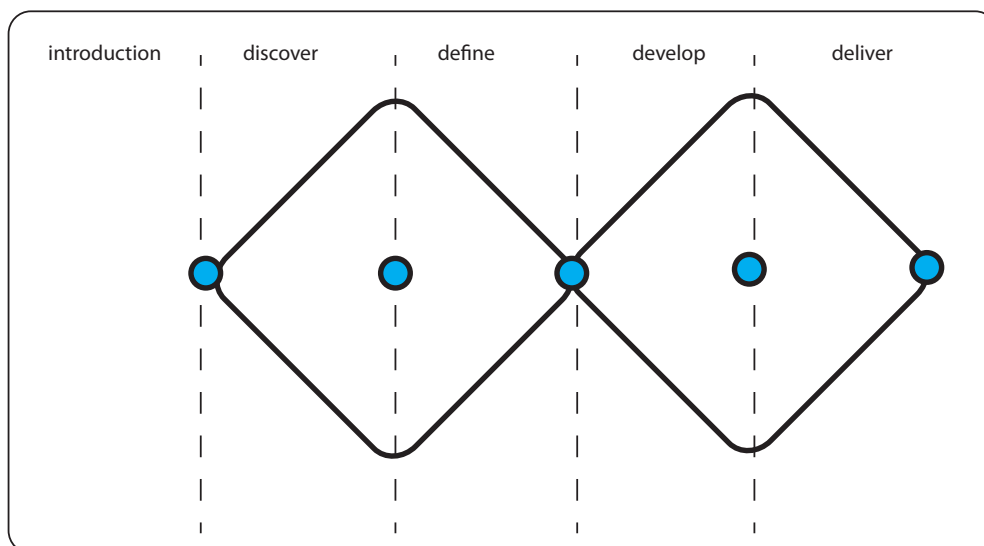
The Design and preparation of the workshops was challenging in terms of the number of unknown factors. While the team were familiar with managing the engagement of diverse participants so many uncertain factors made planning detail difficult.

Final year MDes Product Design students were invited to participate in the workshops as facilitators to help support and implement ideas and thoughts of the spinal injury (SI) participants. 11 students expressed interest and each participated in some or all the workshops. We were unsure at the outset of the demand and level of support required (as number of participants were unknown) and while trying to establish a balance of researchers, students and patients conscious not to intimidate by an imbalance of SHU participants. We were aware we would be engaging with participants at an acute stage of

treatment which brought complex challenges. The research team were generally apprehensive regards the potentially diverse emotional, physical and cognitive condition of the participants and developing an appropriate format and structure of the workshops. Consequently the research team developed a workshop programme that was flexible and adaptable anticipating the potential for improvisation and creative responses.

Six 3-hour workshop sessions were scheduled each Wednesday afternoon at The Princess Royal Spinal & Neurorehabilitation Centre, Sheffield. Unfortunately one session was cancelled due to industrial strike action.

Strategic model for workshops,



Workshop 1 – 16th November 2011

- Design Perceptions
- Design presentation 'Potato peelers'
- Spaghetti challenge

Following introductions participants were engaged in a discussion that focused on, why they had volunteered for the workshops, what their expectations were and what their perceptions of design were.

Some of the participants responded with;

'design is art'.....'design is about making money'

Some of the participants cynically assumed the research team were there to get some good ideas that they could commercially exploit. The research team

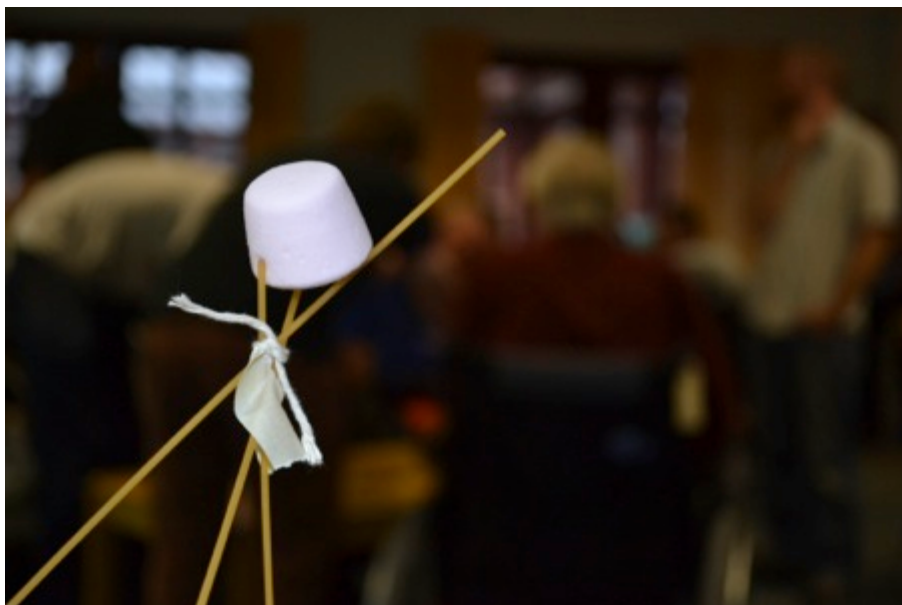
ensured the participants the workshops were there for them to develop and take ownership of their own ideas.

A presentation to articulate aspects (form and function) of design and multi solutions to problems focused on the design of potato peelers.



The 'Spaghetti challenge' enabled the SI participants to utilise and apply their creative thinking. Using dried spaghetti, marshmallows and adhesive tape participants were challenged to build the tallest possible structure within a strict 18-minute time frame. Creative direction from the SI participants was supported, where appropriate, by students who facilitated the challenge.

Following completion of the challenge the research team reflected on findings from previous tasks that had been undertaken by a range of participants. Based on the success of the challenge, 'to build the tallest structure', groups that adopted a trial and error approach were more successful than those that used the time for more theoretical planning, concluding that we learn through doing and should accept failure as a positive learning experience. Children are one of the groups best in succeeding in the challenge while company CEO's the least.





Workshop 2 – 23rd November 2011

- **Design Encounters**
- Observation – Photography

Participants were asked to explore the hospital environment and take photographs recording their encounters. Students accompanied SI participants who directed the photography where appropriate. Digital cameras were provided by the ADRC research centre along with a colour printer to enable physical prints for display and discussion.

The task;

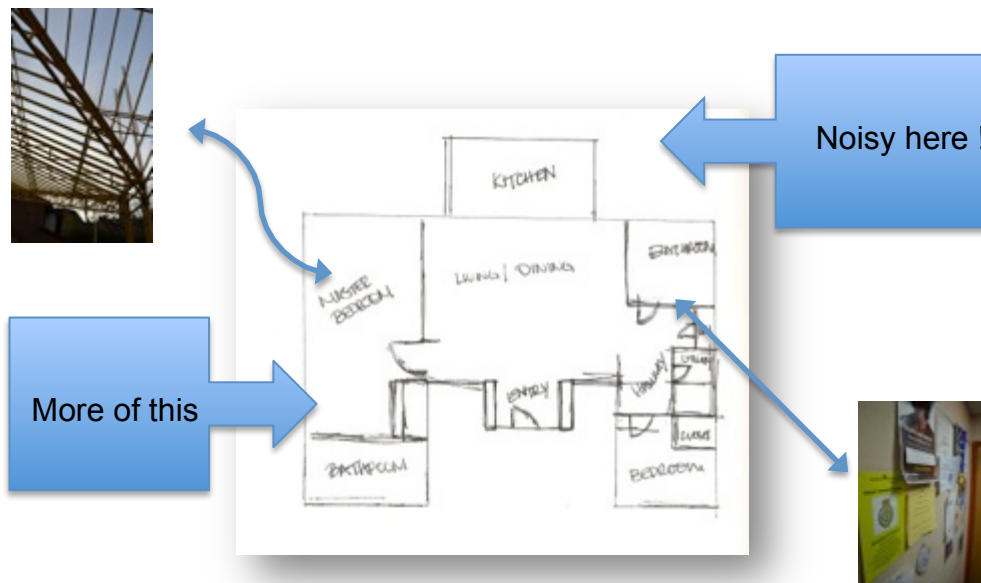
Take photographs and make notes in places where you encounter:

- Colour (a particular colour perhaps)
- Sounds (of laughter, quiet places or noisy spaces)
- Barriers (physical and perceptual)
- Light and dark places (physical and perceptual)
- Evidence of nature – the elements (earth, fire, water, air)
- Order and chaos (repeat patterns, multiples randomness)
- Textures (Interfaces between different materials)

- Visual signs/instructions (A-Z letter forms)
- Unusual views or unusual shapes



Sorting these experiences onto a map and working as teams participants begin to visualize their encounters in relation to where and why they recorded them.



Workshop 3 – 7th December 2011

- **Lateral thinking and Design Mapping**

The participants were engaged in a Lateral thinking exercise to highlight different perspectives on thinking. The exercise provided metaphors to articulate the fact that as in design activity and that there is often more than one answer to a question;

Examples:

1. *Three switches outside a windowless room are connected to three light bulbs inside the room. How can you determine which switch is connected to which bulb if you may enter the room only once?*
2. *A man is replacing a wheel on his car, when he accidentally drops the four nuts used to hold the wheel on the car, and they fall into a deep drain, irretrievably lost. A passing girl offers him a solution which enables him to drive home. What is it?*
3. *What can you put in a wooden box that would make it lighter? The more of them you put in the lighter it becomes, yet the box stays empty.*

Re-mapping

Utilising the lateral thinking exercise, participants were asked to rethink the clusters of photographs and remap/regroup the information they had collected by different key words other than by geographical location.



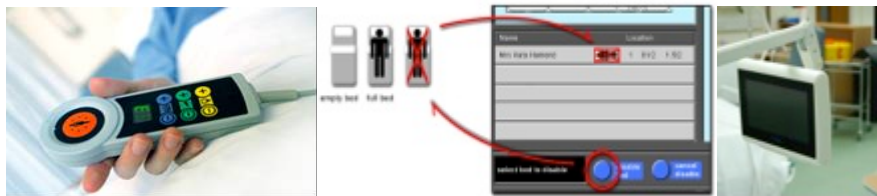
Workshop 4 – 14th December 2011

Design Case study presentation

Design Mapping. Design islands.

Case study on the development of a hospital communication system developed by Design Futures.

Mark Phillips – Design Director Design Futures a Knowledge exchange and consultancy arm of the Art & Design Research Centre at Sheffield Hallam University



Re-mapping – Design islands

Participants were encouraged to review the mapping clusters from workshop 3 and create island themes to map their Design encounters from Workshop 2. Conceptual islands were adopted to contrast with the 'real world' hospital map utilized in workshop 3. The three islands themes that emerged were;

- Chaos island
- Fantasy island
- Island of order.



Key questions that the participants defined that emerged from the island were;

- 1) How can design create a more 'natural' environment? (more evidence of nature)
- 2) How can patients leave a legacy/story?
- 3) How can patients be empowered and become more independent through adaptations to the environment?

Workshop 5 – 21st December 2011

- **Design activity – T-shirt design.**
- **Design Perceptions**

The design challenge was to create a graphic for a T-shirt that captured and conveyed the essence of the design workshops. Participants were encouraged to engage in mark making on pre-prepared T-shirt outlines and/or had the option of utilizing and directing the Design students' skills to realize their ideas.

C5
C6





The session concluded by reflecting on whether the participants' perception of Design and its relevance to their lives had changed as a result of the workshops.

The T-shirt Design concepts were refined by students following the workshop and developed into print ready artwork for production of the T-shirts

Reflections

Our concern regarding the unpredictable profile of the attendees and level of attendance for the workshops was confirmed. Volunteers varied in age, gender, backgrounds, interests and health conditions. Attendance was sporadic due to the fact many had to attend physio sessions (generally up to one hour) during each of the three-hour workshops. Some participants were discharged from the hospital before the end of the workshop programme. Consequently the workshop programme had to allow participants to dip in and out facilitating those who might have missed part or all of a session.

One of the participants attended the first session in a bed that required the removal of a temporary partition wall to allow her access. The same participant attended the next two workshops in a wheel chair with oxygen cylinders which determined the length of her engagement. The participant was too ill to attend the fourth and fifth workshop.

During a presentation in workshop three a participant asked for the projector to be turned off because the intense light was disturbing him. The presentation continued without the visual material prepared.

The response to the workshops from the volunteers was generally very positive. What surprised the research team was the importance of detail.



'The nicest thing for me today was being able to drink out of a cup rather than a beaker. It makes you feel normal'.

The medical team who were enthusiastic in their support through the planning and delivery of the programme attended each session. They commented on how the workshops positively provided an opportunity for participants to engage in activity that was non-medical.

Participants' responses;

'I've been thinking a lot about design. It's been good to have a focus'.

'Everyone is always telling you – that's not the way you do it. But I want to do it my way!! It drives you mad sometimes'.

Response to workshops and objectives :

Perceptions relating to participants understanding and potential for design did appear to shift through engagement and participation in the workshops.

Feedback at the last workshop;

'Design is about everyday'.

Design is a... *'Way of thinking. How things work and make people feel'.*

'Depends what kind of design. Yes, now I think change can happen through design – now I can see problems that need addressing'.

Participants identified **Potential applications for design** through the workshop activities. Some of the participants identified uncomfortable '*signs and messages*' that the environment presented. Chained doors, identified in the 'Design encounters' exercise, suggested '*imprisonment*' and subsequent discussions focused on concepts, ideas and metaphors based around escapism. In combination with another participants "Design encounter" who identified an annoying recorded voice in the elevator, a concept emerged for an elevator voice that responded with 'Beam me up Scotty'. The concept presented a metaphorical 'escape' for a short period of time between floors.

'Something to make me smile when I am on my way to surgery'



Discussions between participants and the medical staff developed the potential for sound within the hospital environment and focused on the disturbing peripheral sounds of the operating theatre that could be masked with more pleasant sounds for the patient.

Legacy was a popular theme where participants felt design could play a key role. A vehicle to share thoughts and ideas were discussed both in terms of a more ambitious digital social network as well as a more low-tech solutions. The lack of prompts in the 'artificial' hospital environment, to indicate the passage of time and engage with natural signals played a key role in discussions. A participant highlighted the pleasure in planting flowers that

brought nature, a sense of time (watching them grow) to the environment and a legacy (for others to enjoy).

More traditional design responses were focused on potential adaptations to aid eating, drinking and digital game play.

The final objective was to raise **confidence** amongst the participants in undertaking everyday tasks. What surprised the research team was the fact that the participants were so confident in presenting and expressing the nature of their condition in the Design Activity conducted in workshop 5. Participants discussed in detail with real interest with medics the nature of their injury that they used to inspire the design of their T. Shirt. Each type of spinal injury is measured by an international clinical Spinal injury classification system. Participants enthusiastically proposed the use of this numerical coding system in the same way as a football numbering system. An assessment of the level of participants' adoption of design thinking and impact on their everyday life was difficult without a structured long term follow up. However participants generally were keen to engage in future design workshops. The research and medical team, both keen to explore the possibility of a follow up series of workshops, felt more focused intense sessions over a shorter time scale would overcome some of the attendance issues and provide more consistent meaningful data for evaluation

Student experience

Once the weekly workshops were in session students were asked to keep a diary. After most sessions a discussion was held between staff and students where concerns or issues could be shared. In general, the students' reported that each week their confidence in working with users outside of the University environment and their belief in the premise of the workshops grew, as did their interest in 'design thinking'.

“ the project was very beneficial particularly in the way that it enabled us as students to see both a 'live' project and also to see that the work that we do can actually make a difference, as often within the confines of university work there is little hands on experience you can gain”

“The great thing about being involved at an early stage is that everyone was learning together - I think this was great from a student's point of view, there wasn't much of a hierarchy as everyone's views and ideas were aired.”.

Overwhelmingly students said that being involved in the workshops had made a significant and positive impact on their design studies and had given them a level of confidence to work directly with users in hospital environments. Students also reported that the workshops has introduced them to a 'new design' direction and that the workshops had altered their perceptions of where they might wish to 'plug-into' the design profession after graduation.

Two of the participating students are now undertaking a placement within the ADRC and working on project in healthcare as a result of the workshops.